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*Fusarium oxysporium* and *Verticillium albo-atrum*. In order to determine the degree of transmission of these wilts through seed tubers, MCKAY<sup>8</sup> has carried on experiments with numerous varieties of potatoes for four years. *Verticillium albo-atrum* occurs somewhat more extensively in small tubers than in medium-sized ones, 30-50 per cent of the crop grown from infected seed tubers being diseased with *Verticillium* wilt, as shown by cultures. *Fusarium oxysporium* is transmitted in a lesser degree, and it appears to be capable of remaining virulent in the soil for several years after the production of a crop of potatoes. Vascular discoloration is an unreliable index of *Verticillium* infection, since approximately 7-17 per cent of cultured tubers which produced the fungus show no discoloration, and 55 per cent of the tubers which show brown vascular discoloration give no organism parasitic for the potato. Although the discoloration occurs at the stem end of the tuber, stem-end seed pieces give no more disease than eye-end pieces of the same infected tuber. Numerous species of *Fusarium* and other fungi mostly saprophytic in nature appear in cultures of wilt diseased tubers.—J. G. BROWN.

**Colloidal hydration.**—In two recent papers MACDOUGAL<sup>9,10</sup> discusses the effects of bases, salts, and other substances on the hydration capacity of prepared colloidal bodies and masses of vegetable cells. In a previous paper<sup>11</sup> he had reported that 0.01 N hydroxides retard the hydration of colloids, and suggested that the chief function of the base forming metals required by plants might be the restricting or limiting of the hydration capacity of the living protoplasm. He now finds that when concentrations of 0.001 to 0.0001 M solutions of chlorides and nitrates, and 0.001 to 0.0001 N hydroxides are used, concentrations comparable to those occurring in living cells, the hydration is increased and not restricted. He therefore reinterprets the function of the metallic elements as accelerators of hydration and growth. Correction is also made regarding the effects of HCl. At a  $P_H$  value of 4.2 the acid is now shown to cause more swelling than water. Some interesting studies of the hydration of roots of different ecological types, and of roots grown in different types of soil are reported. In general he concludes that all substances which are known to facilitate growth in plants will at appropriate concentrations increase the hydration capacity in some of the colloidal objects tested.—C. A. SHULL.

**Vertical distribution of Fucus.**—*Fucus* has long been regarded as characteristic of the zone of tidal play, largely because of its high light requirement

<sup>8</sup> MCKAY, B. M., Transmission of some wilt diseases in seed potatoes. Jour. Agric. Res. 21:821-847. 1921.

<sup>9</sup> MACDOUGAL, D. T., Water deficit and the action of vitamins, amino-compounds, and salts on hydration. Amer. Jour. Bot. 8:296-302. 1921.

<sup>10</sup> ———, The action of bases and salts on biocolloids and cell masses. Proc. Amer. Phil. Soc. 60:15-30. 1921.

<sup>11</sup> ———, Growth in organisms. Science 49:599-605. 1919.